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- 16 -

CLAIMS

- 1- A satellite-based monitoring, measurement or data collection system comprising:
- 5 - a monitoring, measurement or data collection system having a plurality of monitoring stations (4) for remote monitoring, measurement or data collection and for providing data, to respective computation centers (3), and;
- 10 - a satellite system using at least one satellite (2) having an on-board processor for multiplexing up-link data received and broadcasting said multiplexed data in down-link transmission;
- characterized in that
- 15 - said up-link data received by said satellite (2) comprises a digital channel corresponding to a respective computation center (3);
- 20 - said computation center (3) is connected to a down-link adapter (7) connected to a receiver or group of receivers (6); and
- 25 - said down-link adapter is adapted for extracting, from said down-link transmission, only said digital channel corresponding to the respective computation center (3).
- 2- A system according to claim 1, wherein each of said monitoring stations (4) is connected through an up-link adapter (5) to the satellite up-link broadcasting station (1).
- 3- A system according to claim 1 or 2, wherein said satellite system is a digital direct broadcast satellite system.
- 25 4- A system according to any one of the previous claims, wherein at least one of said monitoring stations (4) has at least one channel from the up-link transmission allocated thereto.
- 30 5- A system according to claim 4, wherein several remote channels, or several monitoring stations (4) are grouped together using sub-multiplexing channel capabilities of said digital direct broadcast satellite system.
- 6- A system according to any one of the previous claims, wherein a monitoring station (4) has a receiver for synchronizing message

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- 17 -

transmission using data extracted from said down-link channel multiplex content.

- 5 7- A system according to any one of the previous claims, wherein time and/or date is broadcast to said down-link adapters (7), and optionally to said digital direct broadcast satellite receivers (6).
- 8- A down-link adapter for extracting at least one channel from a down-link transmission as claimed in claim 1.
- 10 9- A down-link adapter according to claim 8 for converting data framing from said satellite down-link data channel rate to message format and/or converting data rate to rate adapted to a cyclic data rate of said monitoring, measurement or data collection system.
- 10-A down-link adapter according to any one of claims 8 or 9 wherein said down-link adapter provides data to another adapter connected to a monitoring station (4).
- 15 11-An up-link adapter for converting signals received from a monitoring station (4) of a monitoring, measurement or data collection system, into signals suitable for digital up-link transmission as claimed in claim 2.
- 12-An up-link adapter according to claim 11 for converting data message format from said monitoring station (4) to an up-link format of said satellite system and/or converting data rate to an uplink rate adapted to said satellite system.
- 20 13-An up-link adapter according to claims 10 and 11 wherein said up-link adapter (5) receives data from another adapter such as a down-link adapter (7).
- 25 14-A method for interconnecting elements of a monitoring, measurement or data collection using a satellite system, comprising:
- remote monitoring, measurement or data collection by means of a plurality of monitoring stations (4) and providing data to respective computation centers (3), and;
 - 30 - at least one satellite (2) of said system multiplexing up-link data by means of an on-board processor and broadcasting said multiplexed data in down-link transmission;
- characterized by the further steps of:
- 35 - transmitting a digital channel in said up-link data to said satellite (2), said channel corresponding to a respective computation center (3),

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- 18 -

said computation center (3) being connected to a down-link adapter (7) connected to a satellite receiver or a group of satellite receivers (6); and

- 5 - extracting from said down-link transmission, by said down-link adapter, only said digital channel corresponding to the respective computation center (3).

15-A method according to claim 14 wherein said up-link broadcasting station (1) performs up-link broadcasting of data received from an up-link adapter (5) connected thereto.

- 10 16-A method according to claim 12 or 13 wherein said satellite system is a digital direct broadcast satellite system.

17-A method according to claim 14 wherein said broadcasting of the multiplexed data in down-link transmission is performed in time division multiplexing, TDM, mode.

- 15 18-A method according to claim 14 wherein marker indexing is used in said down-link transmission as a synchronization signal.

19-A method according to claim 18 wherein said synchronization is also used for sub-multiplexing up-link channels transmission.

- 20 20-A method for interconnecting adapters (5; 7) as in claim 13, wherein data is returned from a down-link adapter (7) to an up-link adapter (5) transferring time information and/or data information between said adapters (5; 7).

- 25 21-A method for use in the adapter of claim 12 or 13 wherein a data message is delayed before being put into a next frame generated at a digital direct broadcast satellite channel rate, using a frame produced faster than needed by the rate of monitoring, measurement or data collection, thus giving rise to a so-called marker frame carrying data such as timing data.

- 30 22-A method for use in the adapter of claim 8 or 9 wherein data related to time and/or date is/are broadcast through a digital direct broadcast satellite system and wherein a frame received at a digital direct broadcast satellite channel rate, is converted into a message at a monitoring, measurement and data collection rate with the exception of a marker frame carrying data such as timing data.

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- 19 -

23-A method according to claim 22 wherein said timing data is used for evaluating transit time or for providing time to any other unit connected thereto such as a display.

5 24-A method according to claim 23 wherein a transit time of a message from a time instant it is transmitted from an up-link adapter until a time instant it is received by a down-link adapter through a digital direct broadcast satellite is evaluated.

10 25-A method according to claim 13 wherein a computation center (3) broadcasts through a digital direct broadcast satellite, to said monitoring stations (4) by means of an up-link adapter (5) incorporated therein and a monitoring station (4) having a down-link adapter (7) detects a channel specifically addressed thereto, providing data to said monitoring station, said data being usable for implementing a unicast, multicast or broadcast addressing scheme.

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